

4 wavelength as that of a signal light last transmitted in the
5 corresponding group.

1 5. A wavelength division multiplexing optical
2 transmission method according to Claim 1, wherein:
3 the control light is a continuous wave (CW) light.

1 6. A wavelength division multiplexing optical
2 transmission method wherein n (n: 4 or a larger integer) pieces
3 of signal lights can be transmitted, comprising the steps of:
4 grouping transmittable n (n: 4 or a larger integer) pieces
5 of signal lights by x pieces (x: integer, $2 \leq x < n$); and
6 transmitting a control light having the same power as the
7 total power of signal lights not transmitted in the group and
8 having the same wavelength as that of a signal light last
9 transmitted in the group in case the number of transmitted signal
10 lights in the group is smaller than x.

1 7. A wavelength division multiplexing optical
2 transmission system wherein n (n: 4 or a larger integer) pieces
3 of signal lights can be transmitted, comprising:
4 one or more signal light transmitters that respectively
5 transmit a signal light;
6 a first optical multiplexer provided with x (x: integer,
7 $2 \leq x < n$) pieces of signal light input ports;
8 an optical branching device that branches light output
9 from the first optical multiplexer;
10 a control light transmitter that transmits a control light

FOR OFFICIAL USE ONLY

11 based upon the level of the branched light from the optical
12 branching device;

13 a second optical multiplexer that multiplexes light output
14 from the first optical multiplexer and the control light;

15 an optical transmission line on which multiplexed light
16 output from the second optical multiplexer is propagated;

17 an optical demultiplexer that demultiplexes the light
18 transmitted via the optical transmission line into signal lights
19 of respective different wavelengths; and

20 optical receivers that receive the signal lights
21 demultiplexed by the optical demultiplexer.

09918438-000101

1 8. A wavelength division multiplexing optical
2 transmission system according to Claim 7, wherein:

3 the control light transmitter outputs a control light of
4 power equivalent to difference between the following levels in
5 case the level of branched light from the branching device is
6 lower than the total level of x pieces of signal lights.

1 9. A wavelength division multiplexing optical
2 transmission system according to Claim 7, wherein:

3 a control light has the same wavelength as that of a signal
4 light last transmitted from x pieces of signal light transmitters
5 corresponding to the control light transmitter.

1 10. A wavelength division multiplexing optical
2 transmission system according to Claim 7, wherein:

3 the optical transmission line is regulated so that the

4 wavelength characteristic is flat in case multiplexed light
5 acquired by multiplexing n pieces of signal lights is propagated.

1 11. A wavelength division multiplexing optical
2 transmission system according to Claim 7, wherein:
3 multiplexed light output from the second optical
4 multiplexer has a level at which the wavelength characteristic
5 is flat on the optical transmission line.

1 12. A wavelength division multiplexing optical
2 transmission system wherein n (n: 4 or a larger integer) pieces
3 of signal lights can be transmitted, comprising:
4 one or more signal light transmitters that respectively
5 transmit a signal light;
6 a first optical multiplexer provided with x (x: integer,
7 $2 \leq x < n$) pieces of signal light input ports;
8 an optical branching device that branches light output
9 from the first optical multiplexer;
10 a control light transmitter that transmits a control light
11 based upon the level of branched light from the optical branching
12 device;
13 a second optical multiplexer that multiplexes the light
14 output from the first optical multiplexer and the control light;
15 an optical transmission line on which multiplexed light
16 output from the second optical multiplexer is propagated;
17 an optical demultiplexer that demultiplexes the light
18 transmitted via the optical transmission line into signal lights
19 of respective different wavelengths; and

